

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>5</sup> :  B65D 1/32, 23/00	A1	(11) International Publication Number: WO 92/21569 (43) International Publication Date: 10 December 1992 (10.12.92)
<p>(21) International Application Number: PCT/CA91/00204</p> <p>(22) International Filing Date: 7 June 1991 (07.06.91)</p> <p>(71) Applicant: 153981 CANADA INC. [CA/CA]; 557 Melita Crescent, Toronto, Ontario M6G 3Y7 (CA).</p> <p>(72) Inventors: APPLEBY, Paul ; 557 Melita Crescent, Toronto, Ontario M6G 3Y7 (CA). MOSCOVITCH, Jerry, Norman ; 59 Cowan Avenue, Toronto, Ontario M6K 2N1 (CA).</p> <p>(74) Agent: EISEN, Mark, B.; Ridout &amp; Maybee, 101 Richmond Street West, Suite 2300, Toronto, Ontario M5H 2J7 (CA).</p>		<p>(81) Designated States: AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH (European patent), CI (OAPI patent), CM (OAPI patent), DE (European patent), DK (European patent), ES (European patent), FI, FR (European patent), GA (OAPI patent), GB (European patent), GN (OAPI patent), GR (European patent), HU, IT (European patent), JP, KP, KR, LK, LU (European patent), MC, MG, ML (OAPI patent), MN, MR (OAPI patent), MW, NL (European patent), NO, PL, RO, SD, SE (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent).</p> <p>Published With international search report.</p>
<p>(54) Title: INVERTED DISPENSER</p> <p>(57) Abstract</p> <p>A hand holdable, disposable dispensing container (14) of low cost construction, generally of plastic, for the dispensing of fluent, generally viscid materials, including processed foodstuff such as ketchup, relish, mustard and jams; creams, handcreams, lotions, colloidal solids such as toothpaste and the like, has a base portion (18) on which the container (14) is free standing, and a valved dispensing outlet (34) located on a lower side face of the container (14), in underhung protected relation adjacent to the base (18), to permit downward dispensing of selected quantities of the contents without having to resort to inversion of the container. The container (14) incorporates a self-venting pressure balance capability. The container content is always located in the lower part of the container, due to an inner inclined wall (28) and the influence of gravity for immediate dispensing, by squeezing of the container walls (16), and making possible the dispensing of substantially all of the contents so that virtually none is wasted and thrown out with the container (14).</p> <div data-bbox="974 1155 1331 1722"> </div>		

## INVERTED DISPENSER

### FIELD OF THE INVENTION

This invention is directed to a disposable, soft walled, handheld dispensing container suitable for use with foodstuff, condiments, creams and other materials.

### BACKGROUND TO THE INVENTION

In the vending and utilization of many products, particularly where the product is repeatedly dispensed in small, variable quantities, the form of packaging has a great influence on the buyers, and on the buyers utilization of the product.

In the case of certain soft commestibles such as jam and honey, one very successful container has comprised a plastic container of a size and form suitable for being held in the hand of a user, the container having a removable screw top for inserting product therein, the screw top having an upwardly projecting small dispensing lipped aperture with a pivoted closure cap, for use by a user in dispensing a desired quantity of the contents.

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In use, the cap is generally pivoted to an open position, clear of the dispensing aperture. The container is then inverted, to assist the viscid contents to flow under the influence of gravity in covering relation downwardly over the inlet to the dispensing aperture. Manual compression of the container walls then expresses a desired quantity of the contents through the dispensing aperture under a build-up of internal air pressure above the contents, within the container. Cessation of the applied manual pressure then terminates flow of the container contents, so that the container can be returned to an upright position, and the dispensing aperture recapped.

One of the main drawbacks of such prior art containers is the time delay required, subsequent to inverting the container, before dispensing can actually take place, during which time the viscid contents are required to flow from one end of the container to the other under the influence of gravity, or else the air contents initially located above the product transfers as a bubble, to the upper side of the product, on inversion of the container. In any case, the delay is inconvenient, and can encourage users to shake the container in order to accelerate the contents reversal, sometimes with unpleasant results such as contents spillage or uncontrolled expulsion.

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A further drawback to this type of prior art arrangement is the hardening of contents, due to agitation and mixing with the air present within the container, which can impede opening of the closure cap, while creating an undesirable quantity of fouled product.

In the case of screw cap containers of the prior art, the container lip can become fouled with the product. The container contents that become deposited on the screw cap or lid inner surfaces and in the container thread bands are difficult and time consuming to remove, and become stale and oxidized, and in the case of some products, become unpleasantly odorous. All of the contents cannot be readily dispensed, with consequent wastage, upon disposal of the container.

Also known in the prior art are containers containing a hand pump. These leave contents in the bottom of the container that are impossible to dispense and are inclined to be messy. Such containers are difficult to pack for travelling.

In the case of invertable containers having enlarged closure caps with flat heads, upon which the container can be stood in an inverted position, such containers are known for use with hand creams, hair shampoos and conditioners, and in the case of the PEARL DROPS product, with a dentifrice.

These containers generally may be stood in an upright or in an inverted position. Reversal of the container to an upright position substantially negates the benefits of inverted storage.

The closure caps of these prior dispensers require to be removed in order for the product to be dispensed. Being screw caps, this requires the unscrewing of the cap, which frequently impells the user instinctively to return the container to an upright position, thus sacrificing much of the benefits of container inversion.

The screw cap closures are inconvenient to access in the inverted condition, while there generally is difficulty in viewing the progress of the initial flow of the contents during dispensing.

#### SUMMARY OF THE INVENTION

In accordance with the present invention there is provided a handheld, free standing container for the selective dispensing of product, wherein the container is permanently inverted, having an access in air sealing relation located on a lower side face of the container over which the contents dispose themselves, under the influence of gravity.

The present invention thus provides a free standing compressible container for the selective manual dispensing of fluent contents, comprising a manually squeezable enclosure having main walls sealingly engaged to front and rear side walls converging upwardly to a curvate top portion, a first bottom wall inclining upwardly and forwardly having an aperture for the passage of fluent contents therethrough, sealingly engaged to the front side wall, and a second bottom wall inclining upwardly and rearwardly, sealingly engaged to the first bottom wall immediately beneath the aperture and sealingly engaged to a lower edge of the rear side wall; and a heel portion affixed to the enclosure having a base, a rear wall and main walls, the walls of the heel portion being aligned with and supporting the walls of the enclosure such that when the container stands on the base of the heel portion the enclosure is supported in a free standing position.

The present invention further provides a valve means for use with a pressurizable container, comprising: collar attachment means for securing the valve means to an aperture in the container; apertured closure means providing an outlet aperture of limited cross sectional area; deflectable valve means normally extending in a first position in sealing relation across said outlet aperture, and movable away from the outlet aperture to a second, open position in response to pressure within the outlet aperture acting on the valve means.

Valve means are provided for the passage of contents from the container in dispensing relation therethrough.

The preferred container embodiment incorporates an air venting valve means, for admitting atmospheric air within the container subsequent to the dispensing of product therefrom. Upon release of the container walls from a laterally compressed condition, subsequent to dispensing product, the walls return to their original shape and induce a flow of air inwardly through the venting valve, into the container. Thus, air in-flow is induced by the elastic condition of the container walls, which are expanded outwardly as a consequence of the "memory" of the plastic, subsequent to having been squeezed inwardly in a product dispensing operation. The increase in internal volume induces air to fill the space, substantially to atmospheric pressure.

In a first embodiment the present invention provides a handholdable, disposable dispensing container for the dispensing of fluent material, having a base portion to support the container in free standing relation so that the material is concentrated by gravity, at the lower end hand squeezable wall portions, and a valved outlet at a lower portion of the container, normally submerged beneath the surface of the contents of the container, in use to facilitate downward dispensing of the fluent contents

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therethrough, upon compressing of wall portions of the container, and thus to permit ready dispensing of virtually the entire contents of the container.

The upper wall portions of the preferred embodiment are so shaped to preclude free standing thereon of the container, to ensure storage of the container in free standing relation upon its base, so that the contents are predisposed for dispensing.

The preferred embodiment container is shaped to fit comfortably to the hand, for ready squeezing of the main walls within the grasping hand.

The subject closure means in one embodiment is removable. In a further embodiment the subject filler closure means constitutes a permanent portion of the container, in sealed relation therewith, generally being sealed to the container subsequent to the insertion of container contents therein.

In a further embodiment valve means are provided for the access of air to the interior of the container. These air valve means function generally as a non-return valve, wherein a flow of air is induced into the interior of the container upon releasing of the container walls in mutual expanding relation, subsequent to a product dispensing operation

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th rewith. Upon further gripping of the contain r walls in compressing relation, th air valv functi ns in a non-return mode, so that the interior of the container becomes pressurized as a consequence of being squeezed.

The subject container conveys a number of advantages over former prior art containers, such as: greatly enhanced convenience for dispensing product; improved dispensing control, including ready viewing of product as it emerges from the container; low cost, simple container construction; minimized disturbance of product, unless desired; minimal product wastage and contamination; optimized product recovery; and facilitated or inhibited container re-use.

In addition to the aforementioned features certain further aspects of container construction can include: construction of container outer surfaces to preclude free standing storage other than in a desired container orientation, for readiness in dispensing; the provision of a see-through wall portion or area of the container, for viewing the level of contents in the container; location of the dispensing nozzle on a side underface of the container, possibly downwardly inclined at an angle such as 45° to afford a clear view of the dispensed material, while protecting the outlet zone by overhang of the adjacent container portions; the configuring of the internal base

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surface of the container, to be inclined towards the container outlet at an angle of inclination, generally at least equal to the angle of repose of the most viscous fluid for which the container is intended to be used; the provision of a depending, supporting heel portion external to the container inclined interior base wall, to orientate and support the interior base surface at the desired angle of inclination, referred to above. The supporting heel may comprise an external slip-on, a blow-molding with a seam permitting separation or be suitably welded or glued to the container.

Certain desired characteristics of the discharge valve means comprise:

a resilient check valve, responsive to container internal pressure to permit passage of content outwardly therethrough;

utilization of a simple, resilient cantilever closure possessing plastic memory;

or an equivalent multi-arm suspension;

being substantially self-closing on termination of container pressurization;

closure means arranged to be substantially self-cleaning in regard to flow guide faces and valve seal surfaces;

locking means provided to positively lock the closure means in sealing relation with the container; and

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finger grip means to facilitate grasping of the locking means by a user.

In addition to the form of container of the preferred embodiments, other embodiments are contemplated which are described as: (a) truncated wedge shape; and (b) a rectangular shape with angular protrusion. Additional shapes may be adopted in accordance with the present invention, having shapes categorized such as: rectangular shape with truncated angle; rounded wedge shape; tapered juke box shape with angular protrusion; rounded wedge-like shape; and snail shape.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Certain embodiments of the invention are described, purely by way of indication, and not in any limited sense, reference being made to the accompanying drawings, wherein:

Figure 1 is a general view of a container first

embodiment in accordance with the present invention;

Figure 2 is a side elevation of the subject first embodiment;

Figure 3 is a sectional elevation taken at 3-3 of

Figure 2;

Figure 3A is a partial rear end elevation of the first embodiment;

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Figure 4 is a front elevation of a second embodiment;  
Figure 5 is a side elevation of a second embodiment;  
Figure 6 is a diametrical cross section of a dispensing nozzle embodiment for the subject inverted containers;  
Figure 7 is a section taken at 7-7 of Figure 6;  
Figure 8 is a detail of the valve element member of Figure 7;  
Figure 9 is a diametrical section at 9-9 of Figure 8;  
Figure 10 is a general view showing the valve actuator for engaging and disengaging the container valve means;  
Figure 11 is a detail of one embodiment of a container neck by which an outlet valve is mounted;  
Figure 12A shows a detail of the valve closure and guide elements, with the valve in a closed condition; and,  
Figure 12B is a like view with the valve in an open condition.

#### DETAILED DESCRIPTION OF THE EMBODIMENTS OF THE INVENTION

As illustrated in Figures 1 to 3, the container 14 comprises an enclosure having main walls 16, a heel portion 30 and an upwardly and forwardly inclined bottom wall 20 including a valve 22. A front side wall 24 merges into the bottom wall 20 and main walls 16. A rear side wall 26 merges into an interior inclined bottom wall 28 inclining upwardly and rearwardly, sealingly engaged to the bottom wall 20 immediately beneath an aperture for the valve 22.

The heel portion 30 supports the enclosure with its longitudinal axis substantially vertical, to provide stability to the container 14 in the free-standing position. The heel portion 30 comprises a base 18, a rear wall and main walls. The walls of the heel portion are substantially aligned with and support the walls 16, 26 of the enclosure. The heel portion 30 may be removably affixed to the enclosure, or may be glued or welded to the enclosure or formed integrally therewith.

This configuration provides an aesthetically pleasing appearance and a container 14 which is very stable in the free-standing position.

Referring to the Figures 4 and 5 embodiment the container 32 has a characteristically slender form to facilitate one-handed gripping and squeezing of the container main walls. The valve outlet 34 is relieved above the base 36, so as not to contact a supporting surface on which the container stands.

Figure 6 is a diametrical section of a valve 40 embodiment for the subject invention, shown in the closed condition. Figure 11 shows a detail of a threaded neck embodiment 60, of a container aperture, set in container inclined side wall portion 62, by means of which the subject valve 40 can be attached. The valve 40 has a central barrel portion 42 internally threaded at 43 to engage the threads 63 of neck 60 (of Figure 11).

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A closure 44 of cylindrical form closely engages the interior of neck 60. A conical funnel portion 46 terminates at outlet aperture 48.

A domed cap 50 encloses the valve 40, in rotatable engaging relation with shoulder portion 51. Referring to Figure 7 stop pins 49 limit the rotation of cap 50. The cap 50 has a pair of parallel abutment plate portions 52, 53, to engage cantilever spring 54 when valve 40 is secured in the closed condition as shown in Figure 6. Spring 54 is secured by cap 50 to the valve 40. In the open condition for valve 40, shown in Figure 12B, the plate portions 52, 53 serve as guides for the valve spring 54, which is formed of a suitable plastic such as DELRIN (TM) and constitutes the valve closure element also. An aperture 55 in spring 54 serves as an air inlet relief valve being generally covered with the product to be dispensed. The plate portions 52, 53 serve to confine and guide the product as it is dispensed, with the valve 40 in an open condition.

On the application of manual compression to main walls 16, 16, of container 14 internal pressure thus generated deflects spring 54 between the abutment plates 52, 53 as shown in Figure 12, thus displacing the spring 54 and annular closure ring 57 thereof clear of its seat, to permit the downward flow of container contents past the spring 54, between plates 52, 53 and out through the aperture 55.

Referring to Figure 8, the cantilever spring 54 is carried by annular ring 56, seen in section in Figure 6. The spring closure 54 has an annular closure ring 57 by which the outlet aperture 48 of valve 40 is sealed. Rotation of domed cap 50 brings abutment plate portions 52, 53 beneath the spring closure 54, to prevent any opening motion of spring 54 and closure ring 57 from off its seat.

In operation, rotation of cap portion 50 through 90° displaces the abutment plate portions 52, 53 to the sides of spring closure 54. This leaves spring closure 54 free to deflect, in opening relation of the valve 40. Upon the application of manual compression to the main walls 16 the container 14 is pressurized, initiating expulsion of the contents, between abutment plates 52, 53 to exit opening 55.

The wall portion 56 of Figure 10 has a plurality of linear indentations 57 molded therein, to give a finger grip for rotating the valve portion 50 to the valve-open condition or to the valve-closed condition. Also shown is a visual cue 58.

A vent aperture 55 in spring 54 serves as a valve to admit atmospheric air upon release of the container walls 16, at which time the elastic memory of the container tends to restore the walls 16 to their original, uncompressed state.

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This induces an inward flow of atmospheric air through the aperture 55, upwardly through the fluid product.



WE CLAIM:

1. A free standing container for the selective manual dispensing of fluent contents, comprising:  
an enclosure having main walls sealingly engaged to  
to  
front and rear side walls converging upwardly to  
a curvate top portion,  
a first bottom wall inclining upwardly and  
forwardly having an aperture for the passage of fluent  
contents therethrough, sealingly engaged to the front  
side wall, and  
a second bottom wall inclining upwardly and  
rearwardly, sealingly engaged to the first bottom wall  
immediately beneath the aperture and sealingly engaged to  
a lower edge of the rear side wall; and  
a heel portion affixed to the enclosure having a  
base, a rear wall and main walls, the walls of the heel  
portion being aligned with and supporting the walls of  
the enclosure such that when the container stands on the  
base of the heel portion the enclosure is supported in a  
free standing position.

2. A container as defined in claim 1 wherein a longitudinal axis of the enclosure is substantially vertical.
3. A container as defined in claim 1 in which the container forms a truncated wedge shape.
4. A container as defined in claim 1 wherein the heel portion is removably affixed to the enclosure.
5. A container as defined in claim 1 including a valve as defined in claim 8.
6. In combination, a manually squeezable enclosure having main walls sealingly engaged to  
front and rear side walls converging upwardly to a curvate top portion,  
a first bottom wall inclining upwardly and forwardly having an aperture for the passage of fluent contents therethrough, sealingly engaged to the front side wall, and  
a second bottom wall inclining upwardly and rearwardly, sealingly engaged to the first bottom wall immediately beneath the aperture and sealingly engaged to a lower edge of the rear side wall; and

a heel portion having a base, a rear wall and main walls, the walls of the heel portion being aligned with and supporting the walls of the enclosure when the heel portion is affixed to the enclosure such that when the container stands on the base of the heel portion the enclosure is supported in a free standing position.

7. A container as defined in claim 6 wherein a longitudinal axis of the enclosure is substantially vertical.

8. Valve means for use with a pressurizable container, comprising: collar attachment means for securing the valve means to an aperture in the container; apertured closure means providing an outlet aperture of limited cross sectional area; deflectable valve means normally extending in a first position in sealing relation across said outlet aperture, and movable away from the outlet aperture to a second, open position in response to pressure within the outlet aperture acting on the valve means.

9. The valve means as set forth in claim 8, said deflectable valve means having at least one portion thereof serving as a spring to apply closing force

thereto, to move the valve means from said second position to said first position on release of pressure within said outlet aperture.

10. The valve means as set forth in claim 8, including valve disabling means movable from a first withdrawn position to a second, engaged position wherein said disabling means engages said deflectable valve means in said first position, to preclude movement of the valve means to said second, open position.

11. The valve means as set forth in claim 9, said valve disabling means in said first withdrawn position providing a flow guidance surface, located adjacent said outlet aperture.

12. The valve means as set forth in claim 9, said valve disabling means comprising a pair of spaced abutments receiving a portion of said spring in cantilevered relation therebetween when in said first, withdrawn position, and in said second position having one of the abutments positioned in pressing relation with the valve means, to secure the valve means in the first said position thereof.

13. The valve means as set forth in claim 8, said valve spring portion being of plastic, and having memory tending to restore said spring portion to a predetermined shape.

14. The valve means as set forth in claim 12, said spring portion having a closure ring extending from a surface portion thereof.

15. The valve means as set forth in claim 12, said cantilevered spring portion having an aperture therethrough positioned in aligned relation with said container aperture in use to permit the inward passage of air within said container.

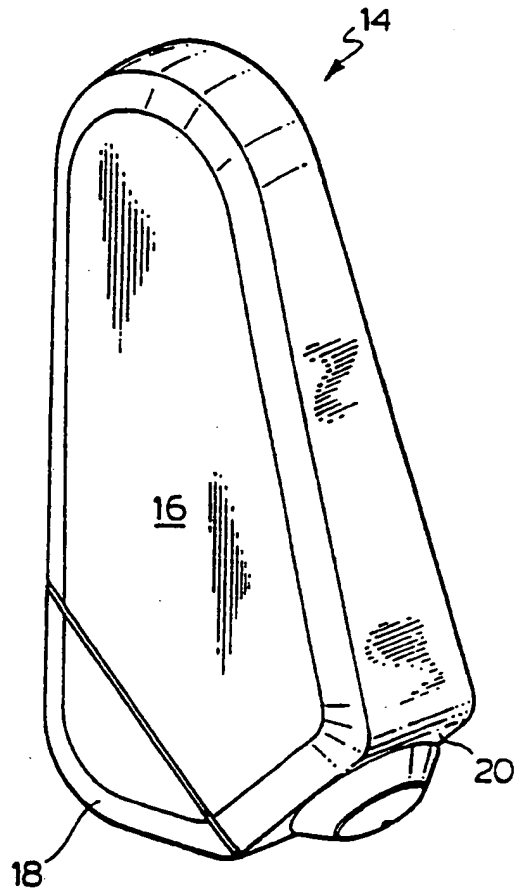


FIG. 1. ↙

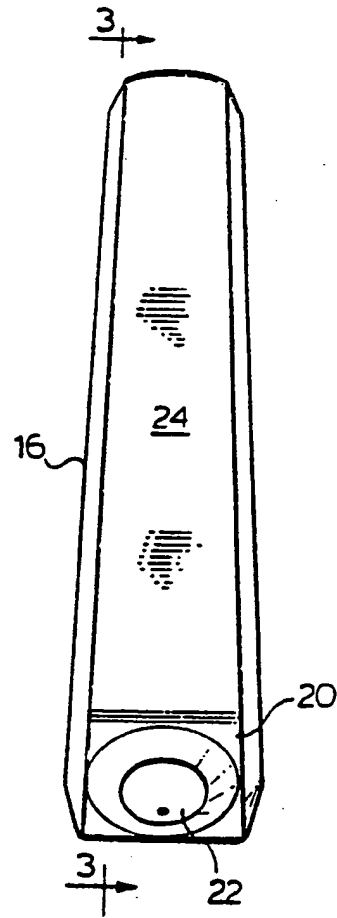
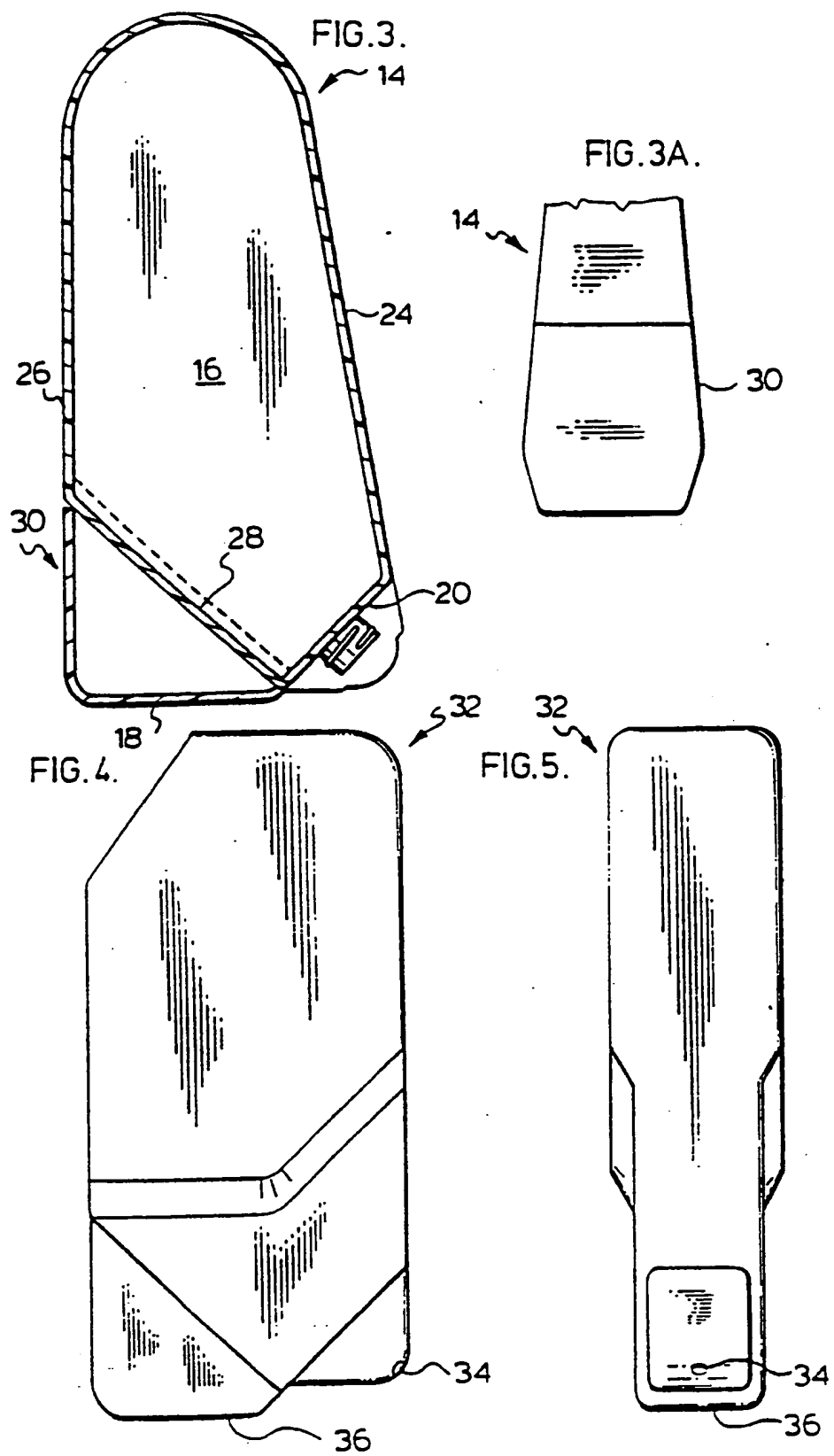


FIG. 2.



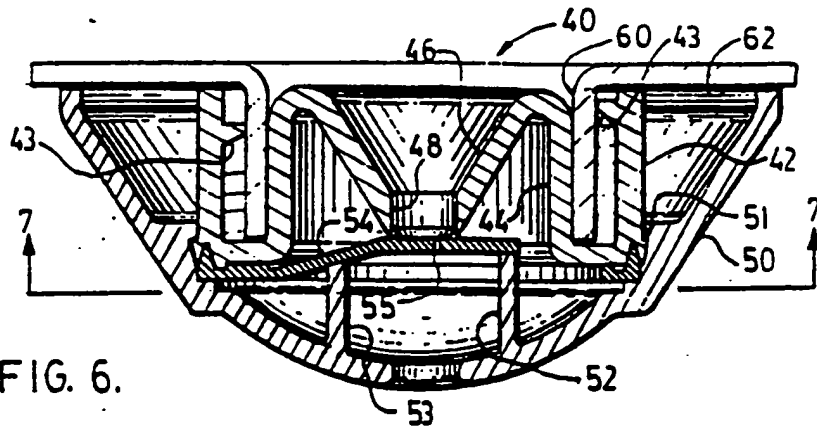


FIG. 6.

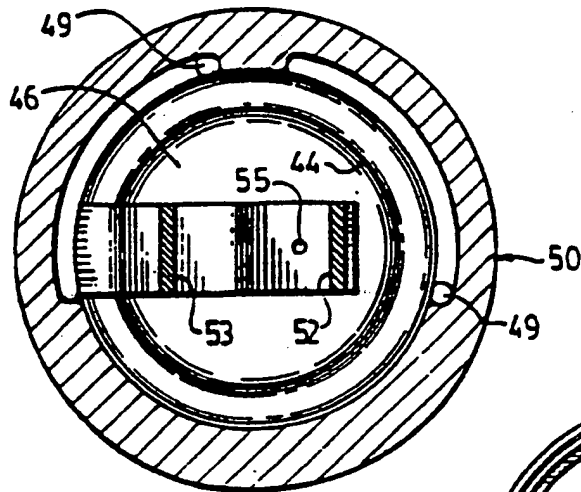


FIG. 7.

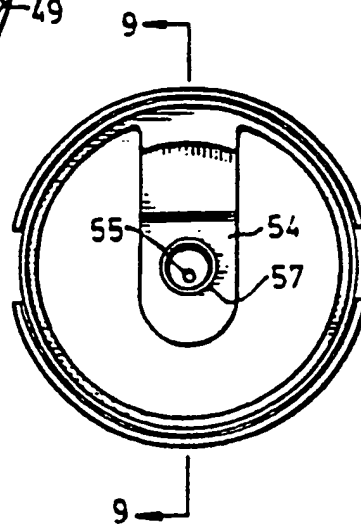


FIG. 8.

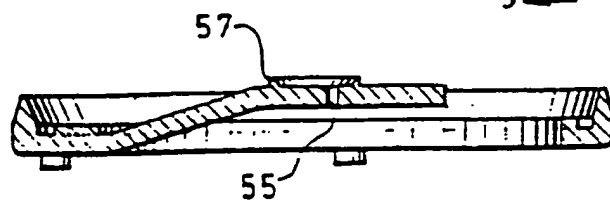
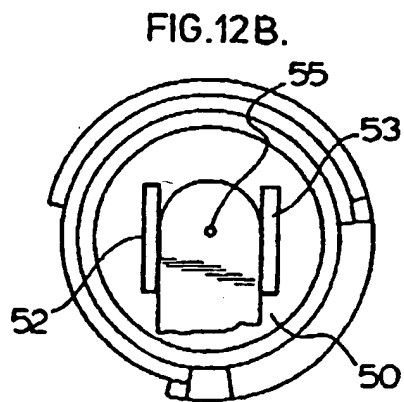
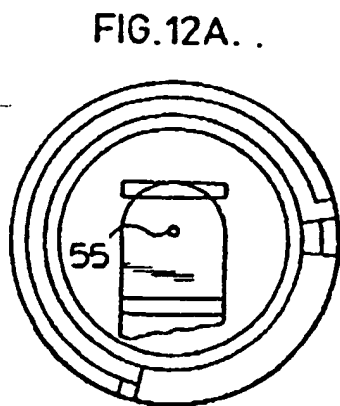
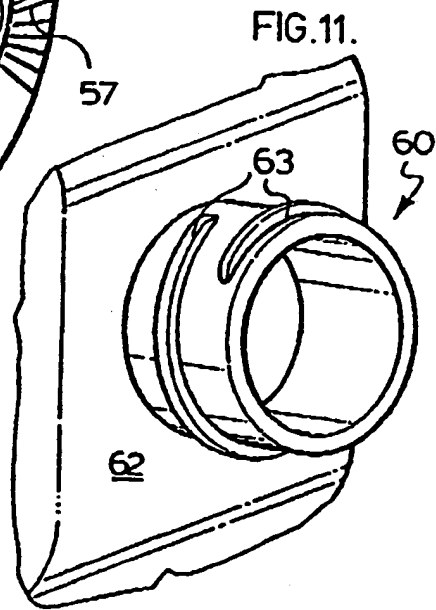
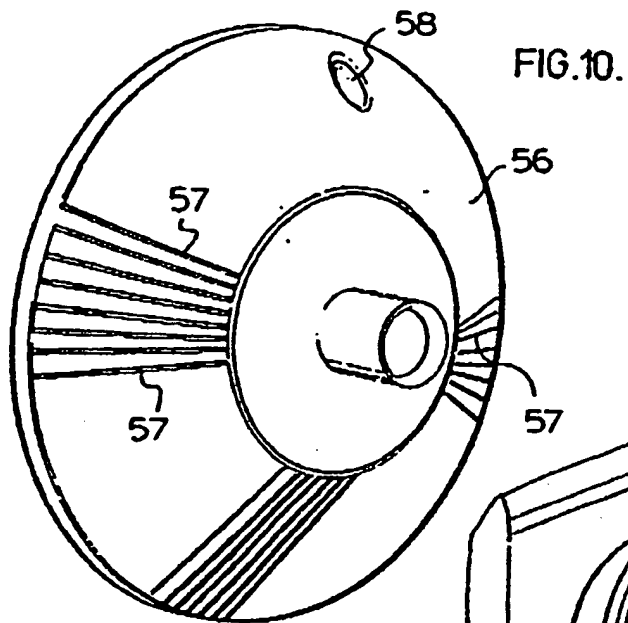
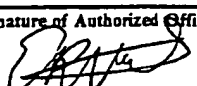


FIG. 9.





<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate)	
According to International Patent Classification (IPC) or to both National Classification and IPC Int.C1.5      B 65 D 1/32      B 65 D 23/00	
<b>II. FIELDS SEARCHED</b>	
Minimum Documentation Searched <sup>7</sup>	
Classification System	Classification Symbols
Int.C1.5	B 65 D      A 47 K
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>	
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup></b>	
Category <sup>6</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>
A	EP,A,0412390 (PROCTER & GAMBLE) 13 February 1991, see page 8, claim 1; figures 1,2,4 ---
A	DE,A,1541353 (BRÜHL) 16 October 1969, see figures 1-3 ---
A	US,A,2920777 (COLE) 12 January 1960, see figures 1,2 -----
<p><sup>10</sup> Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&amp;" document member of the same patent family</p>	
<b>IV. CERTIFICATION</b>	
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
12-02-1992	12.05.92
International Searching Authority	Signature of Authorized Officer
EUROPEAN PATENT OFFICE	 Els Vonk

## FURTHER INFORMATION (

## INFORMATION FROM THE SECOND SHEET

V. ☐ OBSERVATION WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE <sup>1</sup>

This International search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim numbers  
Authority, namely:

because they relate to subject matter not required to be searched by this

2. ☐ Claim numbers  
with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

because they relate to parts of the international application that do not comply

3. ☐ Claim numbers  
the second and third sentences of PCT Rule 6.4(a).

because they are dependent claims and are not drafted in accordance with

VI. ☒ OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING <sup>2</sup>

This International Searching Authority found multiple inventions in this international application as follows:

Claims 1- 7: Please see PCT/ISA/206 sent on 11/03/92.  
Claims 8-15:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application
2. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:
3. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers: 1-7
4. ☐ As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee.

## Remark on Protest:

- ☐ The additional search fees were accompanied by applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

# ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO.

CA 9100204

SA 48254

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 23/04/92  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A- 0412390	13-02-91	US-A- 4969581	13-11-90
		AU-A- 6026690	14-02-91
		CA-A- 2022853	09-02-91
		CN-A- 1049829	13-03-91
		JP-A- 3148454	25-06-91
DE-A- 1541353	16-10-69	None	
US-A- 2920777		None	